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Alcohol Involvement in Fatal Traffic Crashes 1994

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16. Abstract

This report presents estimates of alcohol involvement in fatal traffic crashes that occurred during 1994. The data are abstracted from FARS and represent a combination of actual blood alcohol concentration (BAC) test results and estimated BAC distributions for those drivers and nonoccupants for whom no BAC test results are available. The estimates are made using a model developed by the National Highway Traffic Safety Administration.

In 1994, 32.2% of all fatalities occurred in crashes with a driver or nonoccupant with BAC of 0.10 or greater (in this report, a BAC of 0.10 or greater is synonymous with intoxication). This represents a 30.5% reduction compared to 1982, when 46.3% of all fatalities occurred in crashes that involved an intoxicated active participation. Occupant fatalities resulting from crashes involving an intoxicated driver or nonoccupant totaled 10,780. Less than one-half (41.7%) of the occupant fatalities in single-vehicle crashes involved an intoxicated driver, compared with 22.4% of the occupant fatalities in multi-vehicle crashes. An estimated 36.4% of the fatalities in nonoccupant crashes involved an intoxicated driver or nonoccupant.

More than two-thirds (66.8%) of the fatally injured drivers in single-vehicle fatal crashes on weekend nights were drunk. Overall, male drivers involved in fatal crashes were almost twice as likely as female drivers to be drunk (21.9% vs. 11.1%, respectively).

Drivers of age 21-24 years exhibited the highest rates of intoxication (28.1%) followed by drivers of age 25-29 (27.8%). Drivers of age 16-20 years were intoxicated 14.1% of the time.

Between 1982 and 1994, estimated reductions in the proportion of intoxicated drivers in fatal crashes are 37% for drivers of passenger cars, 34% for light trucks and vans, 65% for medium trucks, 67% for heavy trucks, and 19% for motorcycles.

Drivers of motorcycles continue to exhibit a high rate of intoxication in fatal crashes, 40.5% of involved drivers exhibiting a BAC of at least 0.10, compared to 34.7% for drivers of light trucks and vans, and 30.6% for drivers of passenger cars.

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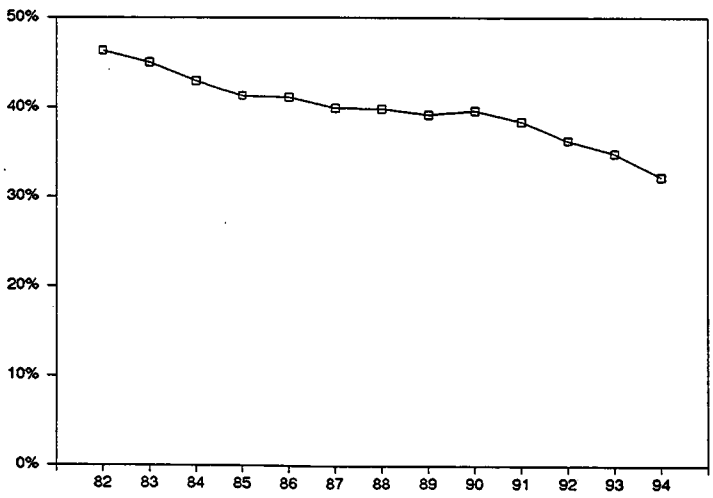
EXECUTIVE SUMMARY

This report presents estimates of alcohol involvement in fatal traffic crashes that occurred during 1994. Several comparisons of alcohol involvement for the period 1982-1994 are presented to investigate changes and trends. The data are abstracted from the Fatal Accident Reporting System (FARS) and represent a combination of actual blood alcohol concentration (BAC) test results and estimated BAC distributions for those drivers and nonoccupants for whom no BAC test results are available. The estimates are made using a model developed by the National Highway Traffic Safety Administration.

In 1994, 32.2 percent of all fatalities involved at least one driver or nonoccupant with BAC of 0.10 or greater (in this report, a BAC of 0.10 or greater is synonymous with intoxication). This represents a 30.5 percent reduction compared to 1982, when 46.3 percent of all fatalities occurred in crashes that involved an intoxicated active participant. Occupant fatalities resulting from crashes involving an intoxicated driver or nonoccupant totalled 10,780. Less than one-half (41.7 percent) of the occupant fatalities in single-vehicle crashes involved an intoxicated driver, compared with 22.4 percent of the occupant fatalities in multi-vehicle crashes. An estimated 36.4 percent of the fatalities in nonoccupant crashes involved an intoxicated driver or nonoccupant.

More than two-thirds (66.8 percent) of the fatally injured drivers in single-vehicle fatal crashes on weekend nights were drunk. Overall, male drivers involved in fatal crashes were almost twice as likely as female drivers to be drunk (21.9 percent vs. 11.1 percent, respectively).



The overall trend in fatalities from crashes involving an intoxicated participant reflects a general decline from 46.3% in 1982 to 32.2% in 1994.

Drivers of age 21-24 years exhibited the highest rates of intoxication (28.1 percent) followed by drivers of age 25-29 (27.8 percent). Drivers of age 16-20 years were intoxicated 14.1 percent of the time.

Between 1982 and 1994, estimated reductions in the proportion of intoxicated drivers in fatal crashes are 37 percent for drivers of passenger cars, 34 percent for light trucks and vans, 65 percent for medium trucks, 67 percent for heavy trucks, and 19 percent for motorcycles.

Drivers of motorcycles continue to exhibit a high rate of intoxication in fatal crashes, with 40.5 percent of involved drivers exhibiting a BAC of at least 0.10, compared to 34.7 percent for drivers of light trucks and vans, and 30.6 percent for drivers of passenger cars.

The following comparisons are drawn between 1994 and 1993:

- In 1994, 32.5 percent of all fatal crashes involved a driver or nonoccupant with BAC of 0.10 or greater, a decrease from 35 percent in 1993.

- The decrease from 1993 was proportionally larger during the nighttime than during the day (6:00 am to 5:59 pm).

- The largest decreases in the rate of alcohol involvement from 1993 occurred in nonoccupant crashes (daytime and nighttime), followed by declines in single-vehicle (daytime) and mult-vehicle crashes (weekend nights).

- The decrease in alcohol involvement in single-vehicle crashes was more pronounced in urban areas, while alcohol involvement in multi-vehicle crashes decreased more in urban areas. The decrease in alcohol in nonoccupant crashes was essentially limited to urban areas.

- Alcohol involvement decreased faster among involved male drivers than among involved female drivers. However, female drivers continue to exhibit much lower rates of alcohol involvement in fatal crashes.

- Decreases in alcohol involvement were observed among fatal crash-involved drivers in younger driver age groups through 20 years old.

INTRODUCTION

It is a well-established fact that drunk driving plays a major role in fatal crashes. Research has demonstrated that alcohol in a driver's bloodstream greatly impairs one's ability to operate a vehicle safely.

This report presents data obtained from the Fatal Accident Reporting System (FARS) and analyzed using a procedure to estimate the BAC level for drivers and nonoccupants involved in fatal crashes. The report describes the magnitude of the drunk driving problem in the United States, highlights the circumstances under which fatal crashes are frequently associated with alcohol, and shows recent trends in alcohol involvement in fatal crashes.

1. Data

FARS contains data on all fatal traffic crashes from each of the states. The data include the results of chemical blood alcohol tests of drivers involved in fatal crashes when they are available. These blood-alcohol concentration (BAC) tests form the basis of the statistics reported here. However, no state reports a BAC value for every driver, for various technical, practical or economic reasons. The missing data rate ranges from a few percent in some states to nearly complete absence of testing in others. **Although the nationwide BAC reporting rate has risen from about 54% to 73% for fatally injured drivers and from 16% to 25% for surviving drivers during the past eleven years, there are still too many unknown BAC values to ignore.** Alcohol involvement for drivers with unknown BAC values must be estimated before valid statistics on the role of alcohol in fatal crashes can be determined. The same is true for nonoccupants.

2. Estimation

Several methods have been used previously to estimate BAC values for drivers who had not been tested. Each method has substantial limitations. To overcome many of these limitations, and in particular to estimate BAC values for surviving drivers, the National Center for Statistics and Analysis has developed a method based on discriminant analysis to estimate BAC values for all drivers involved in fatal crashes. The method is documented completely in Reference 2. Briefly, the method estimates unknown BACs from the known BAC data of drivers with similar characteristics (such as sex, crash time, police alcohol indication, and vehicle type). This method was used to produce all statistics in this report.

3. Presentation

BAC test results range from 0.00 to more than 0.30. The numbers represent the amount of alcohol, by weight, per amount of blood, by volume. In practice, BAC test results measure the percentage of alcohol contained in the blood. For the purposes of this report, it is impractical to treat BAC as a continuous variable. Instead, BAC is classified into three groups which tell the story of drunk driv-

ing in a concise and directly accessible way:

- the 0.00 group of drivers (sober drivers) whose blood contains no alcohol;
- the 0.01-0.09 group of drivers, whose blood contains some alcohol, but less than 0.10 percent; and
- the 0.10+ group of drivers (intoxicated or drunk drivers) whose BAC is at or above the usual level of legal intoxication.

In the tables of this report, alcohol involvement is shown by listing either the percentages of drivers in each of the three groups, or the percentage of drivers in the high-BAC (0.10+) group only, together with the total number of crashes or drivers, as appropriate. Note that disaggregated tables may not sum to the aggregate total, due to missing data. For example, the total of day and night crashes is less than the total of all crashes since crash time is unknown for a few crashes.

4. Interpretation of Estimates

The procedure used throughout this report produces estimates, not exact counts. The possible error of these estimates is not known precisely. However, extensive validation tests suggest that the error of any one estimate is relatively small and, more importantly, does not appreciably affect comparisons such as those in the section on trends.

In addition, it is necessary to emphasize that none of the tabulations presented can be interpreted as implying a direct causal relationship between alcohol use and any other attribute of fatal crashes. Inferences concerning causality can only be made on the basis of additional information that is independent of the FARS data.

5. Reporting Level

Alcohol involvement in motor vehicle crashes is customarily reported for crashes or for participants. For persons, the BAC status of each active participant (driver, pedestrian, or bicyclist) in the crash is reported individually.

For crashes, the entire crash is classified at the highest BAC level of any active participant. In crashes in which individual BACs are known, the crash is given a count of 1 at the appropriate BAC level. Thus, a 0.00 crash is one in which all drivers and nonoccupants are sober, a 0.01-0.09 crash has at least one driver or nonoccupant at this level, but none at higher BAC, and a 0.10+ crash has at least one driver or nonoccupant at the 0.10+ level.

For crashes in which not all individual BACs are known, the count of 1 is distributed among the three BAC levels according to the probability distributions for alcohol involvement of each active participant. In crashes with only one active participant, the crash level BAC distribution will be identical to that of the one participant. Where two or more persons are actively involved, joint probabilities are calculated from the individual BAC probability distributions to arrive at the crash level BAC distribution.

SECTION I - FATALITIES

As a result of traffic crashes, 40,676 persons were killed in 1994. Of these fatalities, 32.2 percent (13,094) occurred in crashes in which a driver or nonoccupant was drunk. An additional 8.6 percent (3,495) involved a driver or nonoccupant who had been drinking but whose BAC was below 0.10. Overall, 40.8 percent (16,589) of all traffic fatalities involved driver or nonoccupant alcohol at some level.

Tables 1 and 2 show age distributions for occupant (driver/passenger) and nonoccupant fatalities, respectively.

The pattern of intoxicated occupant fatalities by age group (Table 1) is similar to that for nonoccupants (Table 2) with peak involvement occurring in the 30-34 year old age group for occupant fatalities and the 30-34 year old age group for nonoccupant fatalities.

Overall, the proportion of nonoccupants who died in crashes (36.4 percent), involving at least one intoxicated participant, is about the same as for occupants (31.4 percent). However, in comparison to occupant fatalities, the proportion of nonoccupant fatalities where at least one driver or nonoccupant was intoxicated is higher for all age groups 16-20 and older.

Figures 1 and 2 show age distributions for the percentage of intoxicated drivers and intoxicated nonoccupants in these crashes. Similarly, the proportion of drunk nonoccupants exceeds that of drunk drivers for the same age groups; however, peak involvement for drivers

Table 1
Occupant Fatalities
By Person Age and Crash BAC
1994

Person Age	0.00	0.01-0.09	0.10+	Total Fatalities
00-15	76.0%	7.8%	16.2%	2,253
16-20	62.0%	12.5%	25.4%	5,365
21-24	45.2%	11.7%	43.1%	3,899
25-29	42.2%	10.5%	47.4%	3,457
30-34	41.5%	9.9%	48.6%	3,163
35-39	45.5%	8.3%	46.2%	2,720
40-44	53.1%	7.1%	39.7%	2,193
45-49	56.9%	7.5%	35.6%	1,867
50-54	66.0%	6.6%	27.4%	1,460
55-64	73.2%	5.8%	21.0%	2,247
65+	86.6%	4.2%	9.1%	5,619
Total	59.9%	8.7%	31.4%	34,293

Table 2
Nonoccupant Fatalities
By Person Age and Crash BAC
1994

Person Age	0.00	0.01-0.09	0.10+	Total Fatalities
00-15	82.5%	5.5%	12.0%	1,132
16-20	47.5%	11.6%	41.0%	350
21-24	34.4%	8.9%	56.7%	324
25-29	35.1%	8.9%	56.0%	418
30-34	30.4%	10.3%	59.3%	535
35-39	33.0%	9.3%	57.7%	534
40-44	38.4%	9.0%	52.7%	480
45-49	43.8%	9.3%	46.9%	365
50-54	45.8%	8.9%	45.3%	225
55-64	51.8%	9.1%	39.2%	499
65+	78.4%	7.1%	14.5%	1,305
Total	55.3%	8.2%	36.4%	6,331

occurs at an earlier age and drops more sharply than for nonoccupants.

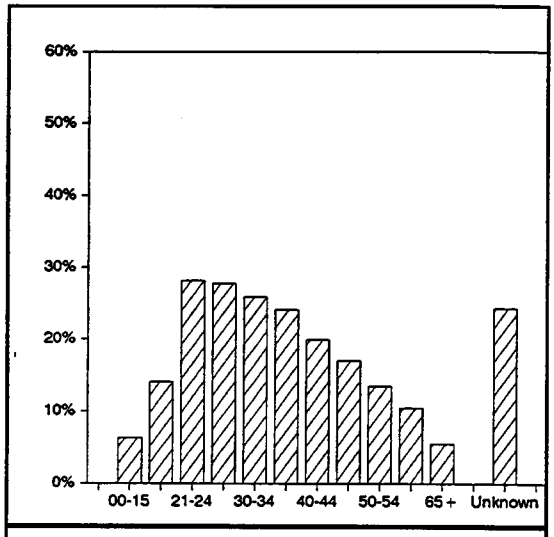


Fig. 1 - Percentage of Drivers with BAC 0.10+ by Age

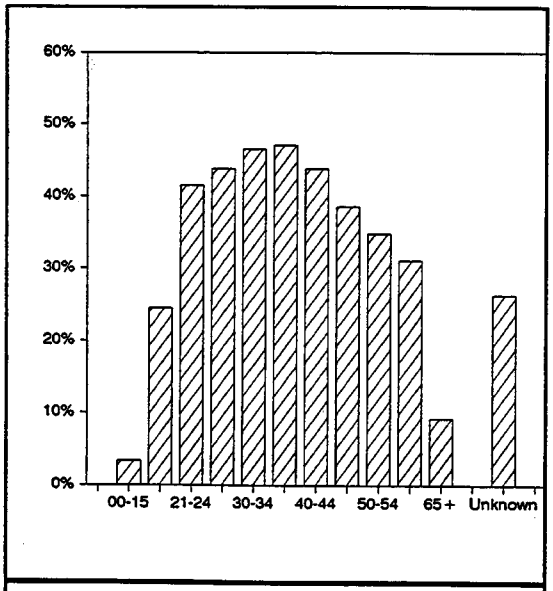


Fig. 2 - Percentage of Nonoccupants with BAC 0.10+ by Age

There were almost as many fatalities in single-vehicle as multi-vehicle crashes. However, the frequency of alcohol occurrence in single-vehicle crashes is much higher, as shown in Table 3.

Table 3
Fatalities
By Crash Type and Crash BAC
1994

Crash Type	0.00	0.01-0.09	0.10+	Total Fatalities
Single-Vehicle	49.5%	8.8%	41.7%	16,016
Multi-Vehicle	69.0%	8.5%	22.4%	18,311
Nonoccupant	55.3%	8.3%	36.4%	6,349

Table 4 presents the BAC distribution of male vs. female fatalities that occurred in 1994. Of the 27,383 male fatalities, 37.4 percent occurred in accidents in which a driver or nonoccupant had a BAC of 0.10 or greater, compared with 21.4 percent of the 13,269 female fatalities.

Table 4
Fatalities
By Sex and Crash BAC
1994

Sex	0.00	0.01-0.09	0.10+	Total Fatalities
Male	53.6%	9.0%	37.4%	27,383
Female	70.9%	7.7%	21.4%	13,269
Total	59.2%	8.6%	32.2%	40,676

SECTION II - CRASHES

In 1994, 36,223 traffic crashes resulted in the death of one or more persons. In 32.5 percent of these crashes, at least one driver or nonoccupant (pedestrian or bicyclist) was at or above the level of intoxication (0.10) as shown in Table 5.

Table 5
Fatal Crash BAC Distribution
1994

0.00	0.01-0.09	0.10+	Total Crashes
59.1%	8.4%	32.5%	36,223

The development of effective countermeasures depends on the ability of safety experts and government agencies to understand the conditions under which drunk driving is particularly prevalent. To assist in this understanding, the summary data of Table 5 can be disaggregated to reveal relationships between alcohol and other fatal crash attributes. Note that the disaggregated data may not add up to the crash total of 36,223 due to unknown values for some variables.

1. Day and Time

Alcohol is more prevalent in fatal crashes at night than during the day, and on weekends compared to weekdays. The following tables summarize these BAC distributions.

Table 6
Fatal Crash BAC Distribution
By Time of Day
1994

Time	0.00	0.01-0.09	0.10+	Total Crashes
Day *	82.0%	5.5%	12.5%	17.656
Night	37.3%	11.3%	51.5%	18,265

* Day is defined as 6:00 a.m. to 5:59 p.m.

Table 7
Fatal Crash BAC Distribution
By Period of Week
1994

Period	0.00	0.01-0.09	0.10+	Total Crashes
Weekday*	69.3%	7.0%	23.6%	20,799
Weekend	45.3%	10.3%	44.4%	15,331

* Weekday is defined as Monday 6:00 a.m. to Friday 5:59 p.m.

Table 8 classifies fatal crashes by both variables simultaneously. During the day on weekdays, 10.2 percent of all fatal crashes involved at least one drunk driver or nonoccupant. On weekends during the day, this percentage almost doubled; on weekend nights, almost three-fifths of all fatal crashes involved one or more drunk drivers or nonoccupants.

Table 8
Fatal Crash BAC Distribution
By Time of Day and
Period of Week
1994

Period	0.00	0.01-0.09	0.10+	Total Crashes
Daytime				
-Weekday	85.0%	4.8%	10.2%	12,783
-Weekend	74.1%	7.3%	18.6%	4,872
Nighttime				
-Weekday	44.3%	10.6%	45.1%	7,928
-Weekend	31.9%	11.8%	56.4%	10,337

It is apparent from these tables that drunk driving is much more prevalent during non-working hours than during the business day.

2. Crash Type

Fatal crashes may be classified into three broad types:

- Single-vehicle crashes, not involving a nonoccupant (pedestrian or bicyclist),
- Multi-vehicle crashes, involving two or more vehicles;
- Nonoccupant crashes, involving a vehicle and a nonoccupant (almost always a single vehicle and a single fatally injured nonoccupant).

Table 9 shows the BAC distributions for these crash types. (See Section 5 of the Introduction on page 2 for a discussion about how alcohol-related crashes are counted.)

Table 9
Fatal Crash BAC Distribution
By Crash Type
1994

Crash Type	0.00	0.01-0.09	0.10+	Total Crashes
Single-Vehicle	49.1%	8.8%	42.1%	14,686
Multi-Vehicle	70.2%	8.2%	21.6%	15,218
Nonoccupant	55.5%	8.2%	36.2%	6,319

Here again, a breakdown by day and time is revealing, as shown by Tables 10 through 12.

Table 10
Fatal Crash BAC Distribution
By Time of Day and Period of Week
Single-Vehicle Crashes
1994

Period	0.00	0.01-0.09	0.10+	Total Crashes
Daytime				
-Weekday	80.3%	4.4%	15.3%	3,707
-Weekend	68.2%	6.7%	25.1%	1,963
Nighttime				
-Weekday	37.7%	10.8%	51.5%	3,640
-Weekend	28.0%	11.3%	60.7%	5,118

Note from Table 10 that 61 percent (8,758/14,428) of the single-vehicle crashes occur between 6 p.m. and 5:59 a.m., when alcohol involvement is relatively high. In contrast, Table 11 indicates that only 38 percent (5,728/15,209) of the multi-vehicle fatal crashes occur during these hours. The majority of multi-vehicle crashes (62 percent) occur during the daytime when alcohol involvement is relatively low.

Table 11
Fatal Crash BAC Distribution
By Time of Day and Period of Week
Multi-Vehicle Crashes
1994

Period	0.00	0.01-0.09	0.10+	Total Crashes
Daytime				
-Weekday	87.7%	5.0%	7.3%	7,116
-Weekend	78.2%	8.0%	13.8%	2,365
Nighttime				
-Weekday	53.2%	10.7%	36.1%	2,582
-Weekend	38.7%	13.4%	47.9%	3,146

The higher rate of alcohol involvement in nonoccupant crashes (Table 12) at all time periods compared to multi-vehicle crashes (Table 11), requires a closer look at both the driver and nonoccupant alcohol involvement.

Table 12
Fatal Crash BAC Distribution
By Time of Day and Period of Week
Nonoccupant Crashes
1994

Period	0.00	0.01-0.09	0.10+	Total Crashes
Daytime				
-Weekday	84.4%	4.9%	10.7%	1,960
-Weekend	78.1%	6.4%	15.5%	544
Nighttime				
-Weekday	45.0%	10.0%	45.0%	1,706
-Weekend	31.1%	10.3%	58.6%	2,073

Table 13 shows the BAC distribution for drivers and nonoccupants (most of whom are pedestrians) in nonoccupant fatal crashes. Row and column totals in Table 13 show plainly that nonoccupants are legally intoxicated (28.8 percent) more frequently than are vehicle drivers (13.0 percent) in nonoccupant fatal crashes.

Table 13
BAC Distribution
For Drivers and Nonoccupants in
Nonoccupant Crashes
1994

Nonocc. BAC	Driver BAC 0.00	0.01-0.09	0.10+	Total
0.00	55.5%	3.0%	6.4%	64.9%
0.01-0.09	4.6%	0.6%	1.1%	6.3%
0.10+	20.7%	2.6%	5.5%	28.8%
Total	80.8%	6.2%	13.0%	100.0%

3. Crash Environment

Fatal crash BAC distributions for urban vs. rural crash location for each crash type are shown in Table 14.

For single-vehicle and multi-vehicle crashes, alcohol involvement was greater in urban than rural fatal crashes, while for nonoccupant fatal crashes, alcohol involvement was greater in rural fatal crashes.

Table 14
Fatal Crash BAC Distribution
By Crash Type and Land Use
1994

Crash Type/ Land Use	0.00	0.01-0.09	0.10+	Total Crashes
Single-Vehicle				
-Urban	48.7%	9.2%	42.2%	4,589
-Rural	49.3%	8.6%	42.1%	10,024
Multi-Vehicle				
-Urban	68.2%	8.3%	23.4%	6,432
-Rural	71.6%	8.1%	20.3%	8,703
Nonoccupant				
-Urban	56.3%	8.3%	35.4%	4,378
-Rural	53.5%	8.1%	38.4%	1,877

Alcohol involvement in nonoccupant fatal crashes tends to increase as the crash roadway's speed limit increases, as shown in Table 15. Roads posted 65 mph appear to be an exception to this pattern, existing primarily in rural areas.

Table 15
Fatal Crash BAC Distribution
By Posted Speed Limit
Nonoccupant Crashes
1994

Speed Limit	0.00	0.01-0.09	0.10+	Total Crashes
25 mph	70.4%	6.7%	22.9%	627
30	64.9%	7.5%	27.6%	974
35	55.5%	8.7%	35.8%	1,061
40	57.6%	8.1%	34.3%	574
45	49.8%	8.2%	42.0%	804
50	47.6%	8.0%	44.4%	283
55	46.8%	9.1%	44.1%	1,549
65	52.9%	7.8%	39.2%	183

There is no apparent relationship between alcohol involvement and speed limit for single- or multi-vehicle crashes (Table 16). Estimates for roads posted 60 mph are based on very small samples.

Table 16
Percentage of High-BAC (0.10+)
Fatal Crashes
By Posted Speed Limit and
Crash Type
1994

Speed Limit	Single Vehicle	Multi-Vehicle
25 mph	44.5%	21.2%
30	41.4%	21.0%
35	45.8%	23.7%
40	47.5%	23.8%
45	47.4%	20.9%
50	46.0%	23.5%
55	43.4%	21.1%
60	22.1%	0.5%
65	20.9%	21.6%

Alcohol involvement in fatal crashes also varies as a function of roadway type. Table 17 gives crash counts and high-BAC (0.10+) percentages for the principal roadway types.

Table 17
Percentage of High-BAC (0.10+)
Fatal Crashes
By Crash Type and
Roadway Function Class
1994

Roadway Fct.Class	Single Vehicle Count	Single Vehicle Pct	Multi-Vehicle Count	Multi-Vehicle Pct	Non-Occupant Count	Non-Occupant Pct
Interstate	2,047	26.6%	1,407	24.5%	610	46.0%
Principal Arterial	2,575	39.8%	5648	22.8%	2,264	40.3%
Minor Arterial	2,203	43.9%	3,378	20.1%	1,246	33.8%
Major Rural Collector	2,735	48.5%	2,163	20.3%	434	38.9%
Local Street/Road	3,622	44.8%	1,598	21.2%	1,277	28.4%

The percentage of crashes involving an intoxicated participant (BAC of 0.10 or more) varies both as a function of the type of crash and type of roadway. For example, the highest percentage of single-vehicle fatal crashes in which a participant was intoxicated was on major rural collectors and for multivehicle fatal crashes it was on the Interstate system. It is also interesting that the highest percentage for nonoccupant fatalities is also on the Interstate.

SECTION III - DRIVERS AND NONOCCUPANTS

1. Overview

In 1994, 54,514 drivers were involved in fatal crashes. Of these drivers, 74.7 percent were sober, 6.1 percent fell in the 0.01-0.09 group, and 19.3 percent were at or above a 0.10 BAC. Similarly, of the 6,907 fatally injured nonoccupants, 66.8 percent were sober, 6.3 percent fell in the 0.01-0.09 group, and 26.9 percent were at or above a 0.10 BAC.

Table 18
BAC Distribution of Drivers and Nonoccupants in Fatal Crashes
1994

Person Type	0.00	0.01-0.09	0.10+	Total Persons
All Drivers	74.7%	6.1%	19.3%	54,514
Fat. Inj. Drivers	62.6%	6.7%	30.7%	23,695
Surv. Drivers	84.0%	5.5%	10.5%	30,819
Fat. Inj. Nonocc.	66.8%	6.3%	26.9%	6,907

Table 18 shows that, on the average, drivers surviving a fatal crash are much less frequently drunk than are fatally injured drivers. Some of the difference may be due to reporting. BAC levels are known more frequently for fatally injured drivers than for survivors. While the alcohol estimation methodology attempts to correct alcohol underreporting, some bias may still remain.

Fatally injured drivers show higher alcohol levels than surviving drivers in all crash types and time periods (Tables 19 through 21).

Table 19
BAC Distribution of Drivers and Nonoccupants By Fatal Crash Type
1994

Crash Type/ Person Type	0.00	0.01-0.09	0.10+	Total Persons
Single-Vehicle Crashes				
All Drivers	49.1%	8.8%	42.1%	14,623
Fat. Inj. Drivers	46.1%	7.6%	46.3%	11,157
Surv. Drivers	58.8%	12.7%	28.5%	3,466
Multi-Vehicle Crashes				
All Drivers	84.5%	4.9%	10.7%	31,107
Fat. Inj. Drivers	77.2%	5.9%	16.8%	12,459
Surv. Drivers	88.9%	4.2%	6.9%	20,648
Non-Occupant Crashes				
Drivers	81.8%	6.0%	12.2%	6,784
Nonoccupants	66.8%	6.3%	26.9%	6,907

In multi-vehicle fatal crashes (Table 20), fatally injured drivers are about twice as likely as surviving drivers to have a BAC of 0.10+, in each day and time class. The absolute differences range from 4-6 percentage points (weekday and weekend daytime) to 18-20 percentage points (weekend and weekday nighttime).

In single-vehicle fatal crashes (Table 21), the proportion of fatally injured drivers with a BAC of 0.10+ exceeds the proportion for surviving drivers by 9-15 percentage points during the weekday and weekend daytime, and by 17-25 percent-

Table 20
BAC Distribution of Drivers
By Crash Outcome, Day and Time
Multi-Vehicle Fatal Crashes
1994

Crash Outcome	Day/ Time	0.00	0.01-0.09	0.10+	Total Drivers
Fatally Injured Drivers	Daytime				
	Wkday	90.8%	3.6%	5.7%	5,966
	Wkend	84.7%	5.0%	10.3%	1,810
	Nighttime				
	Wkday	63.9%	7.5%	28.5%	2,190
	Wkend	51.0%	10.9%	38.1%	2,484
Surviving Drivers	Daytime				
	Wkday	96.2%	1.8%	2.0%	9,717
	Wkend	92.0%	3.5%	4.4%	3,325
	Nighttime				
	Wkday	83.2%	6.0%	10.8%	3,350
	Wkend	74.2%	8.7%	17.2%	4,246

age points during the weekend and weekday nighttime periods.

Table 21
BAC Distribution of Drivers
By Crash Outcome, Day and Time
Single-Vehicle Fatal Crashes
1994

Crash Outcome	Day/ Time	0.00	0.01-0.09	0.10+	Total Drivers
Fatally Injured Drivers	Daytime				
	Wkday	78.7%	3.9%	17.4%	2,853
	Wkend	64.3%	6.4%	29.3%	1,403
	Nighttime				
	Wkday	35.2%	9.5%	55.3%	2,815
	Wkend	24.0%	9.2%	66.8%	3,855
Surviving Drivers	Daytime				
	Wkday	85.6%	6.1%	8.3%	848
	Wkend	77.9%	7.4%	14.7%	551
	Nighttime				
	Wkday	45.8%	15.4%	38.7%	810
	Wkend	40.3%	18.0%	41.7%	1,235

2. Driver Sex

Table 22 shows that male drivers involved in fatal crashes are drunk considerably more frequently than are female drivers.

Table 22
BAC Distribution of Drivers
Involved in Fatal Crashes
By Driver Sex
1994

Driver Sex	0.00	0.01-0.09	0.10+	Total Drivers
Male	71.5%	6.6%	21.9%	40,195
Female	84.8%	4.2%	11.1%	13,550

Table 23 shows that this conclusion holds for all day and time periods.

Alcohol involvement differences between male and female drivers show up

Table 23
BAC Distribution of Drivers
Involved in Fatal Crashes
By Sex, and Crash Day and Time
1994

Driver Sex	Day/ Time	0.00	0.01-0.09	0.10+	Total Drivers
Male Drivers	Daytime				
	Wkday	90.6%	3.1%	6.3%	15,050
	Wkend	81.2%	5.3%	13.5%	5,498
	Nighttime				
	Wkday	60.8%	8.5%	30.7%	8,504
	Wkend	49.3%	10.5%	40.2%	10,919
Female Drivers	Daytime				
	Wkday	94.6%	2.0%	3.4%	6,315
	Wkend	91.6%	2.9%	5.6%	2,115
	Nighttime				
	Wkday	74.4%	6.3%	19.2%	2,271
	Wkend	66.4%	8.0%	25.6%	2,799

Table 24
BAC Distribution of Fatally Injured Drivers by Sex, and Crash Day and Time
1994

Driver Sex	Day/ Time	0.00	0.01-0.09	0.10+	Total Drivers
Male Drivers	Daytime				
	Wkday	84.4%	4.2%	11.5%	5,904
	Wkend	71.4%	6.4%	22.2%	2,291
	Nighttime				
	Wkday	44.8%	8.8%	46.4%	4,020
	Wkend	30.6%	10.3%	59.1%	5,137
Female Drivers	Daytime				
	Wkday	91.9%	2.7%	5.4%	2,948
	Wkend	86.5%	3.8%	9.8%	926
	Nighttime				
	Wkday	60.0%	7.9%	32.1%	1,005
	Wkend	51.5%	7.9%	40.6%	1,219

even more markedly for fatally injured drivers, as shown in Table 24.

3. Driver Age

The overall distribution of alcohol involvement by driver age is shown in Table 25. The percentage of drunk drivers is highest at ages 21-24, and decreases steadily to about 5.5 percent for drivers 65 years or older.

The age-alcohol pattern shown here for all drivers in fatal crashes -- a rapid increase to a peak in the 21-24 age group, followed by a slower decrease -- remains unchanged when specific groups are considered, for example driver fatalities or drivers in single-vehicle crashes.

Table 25
Drivers in Fatal Crashes with BAC of 0.10 or Greater
1994

Age Group	Total Drivers	BAC 0.10+ Count	BAC 0.10+ Percent
00-15	399	25	6.3%
16-20	7,711	1,087	14.1%
21-24	6,280	1,765	28.1%
25-29	6,405	1,780	27.8%
30-34	6,477	1,675	25.9%
35-39	5,462	1,319	24.1%
40-44	4,473	894	20.0%
45-49	3,654	620	17.0%
50-54	2,832	384	13.5%
55-64	3,826	403	10.5%
65+	6,055	330	5.5%
Unknown	940	228	24.3%

4. Driver Age Groups

To highlight the differences between ages, driver age has been classified into three groups: 15-20, 21-44, and 45 or older. Drivers of age 15-20 years can no longer legally purchase alcohol in any state. Table 26 gives the BAC distribution of all drivers for these groups.

Two observations from Table 26 merit special mention.

- The percentages of legally drunk drivers in the three age groups differ markedly from each other.

Table 26
Fatal Crash Driver BAC Distribution
By Age Group
1994

Driver Age	0.00	0.01-0.09	0.10	Total Drivers
15-20	77.7%	8.4%	13.9%	7,957
21-44	67.6%	6.8%	25.5%	29,097
45+	86.1%	3.2%	10.6%	16,367

- The percentage of persons with BAC 0.01 - 0.09 decreases with increasing age.

Tables 27 and 28 disaggregate the fatal crash driver BAC distribution by crash type, day, and time. To simplify the presentation, only the percentage of fatally injured drivers in the high-BAC (0.10+) group is given.

Table 27
Percentage of Fatally Injured Drivers with High BAC (0.10+) in Single-Vehicle Crashes By Driver Age and Crash Day and Time
1994

Period	Driver Age Groups 15-20	21-44	45+
Daytime			
-Weekday	7.9%	23.9%	14.7%
-Weekend	16.1%	40.2%	20.5%
Nighttime			
-Weekday	33.4%	64.8%	47.0%
-Weekend	46.2%	74.8%	60.0%

Table 28
Proportion of Fatally Injured Drivers with High BAC (0.10+) in Multi-Vehicle Crashes By Driver Age and Crash Day and Time
1994

Period	Driver Age Groups 15-20	21-44	45+
Daytime			
-Weekday	2.1%	9.3%	3.9%
-Weekend	5.5%	17.2%	6.1%
Nighttime			
-Weekday	12.1%	37.9%	17.9%
-Weekend	22.1%	47.6%	26.4%

For both single- and multi-vehicle fatal crashes, drivers of age 21-44 years have the highest alcohol involvement in each day and time period.

5. Vehicle Class

All but about 3 percent of the vehicles involved in fatal crashes fall into one of the following types:

- Motorcycles,
- Passenger cars,
- Light trucks and vans (including utility vehicles),
- Medium trucks, or
- Heavy trucks.

Table 29 shows the number of vehicles of each type involved in fatal crashes in 1994, together with the BAC distribution

Table 29
Fatal Crash Driver BAC Distribution
By Vehicle Type
1994

Vehicle Type	0.00	0.01-0.09	0.10+	Total Vehicles
Motorcycles	59.7%	11.4%	28.9%	2,317
Pass. Cars	74.4%	6.2%	19.4%	29,977
Lt. Trks/Vans	70.9%	6.2%	22.9%	16,174
Med. Trucks	95.9%	2.2%	1.9%	542
Heavy Trucks	97.4%	1.2%	1.4%	4,021

of their drivers. The highest proportion of intoxicated drivers are motorcyclists, followed by drivers of light trucks and vans, and drivers of passenger cars.

6. Vehicle Age

Drivers of older vehicles are more likely to have been drinking when their fatal crash occurred than are drivers of newer vehicles.

Table 30
Fatal Crash Driver BAC Distribution
By Vehicle Model Year
1994

Model Year	0.00	0.01-0.09	0.10+	Total Vehicles
Older than '79	65.3%	6.9%	27.8%	6,967
1979-1982	68.4%	6.9%	24.7%	6,375
1983-1986	75.0%	6.0%	19.0%	13,674
1987-1992	78.8%	5.5%	15.7%	25,987

The vehicle-age effect shown in Table 30 holds true for all driver age groups (Table 31).

Table 31
Percentage of High BAC (0.10+) Drivers
in Fatal Crashes
By Vehicle Model Year and Driver Age
1994

Driver Age	Model Year: Older than '79	1979-1982	1983-1986	1987-1992
15-19	12.3%	10.8%	11.3%	12.7%
20-24	32.0%	32.5%	25.9%	24.4%
25-29	40.2%	33.4%	29.5%	22.0%
30-44	35.6%	32.6%	24.7%	17.5%
45-59	22.9%	20.9%	13.5%	11.4%
60+	11.0%	7.0%	5.9%	5.8%

7. Restraint Use

Sober drivers in fatal crashes are considerably more likely reported as having used their safety belts than are drunk drivers.

Table 32 presents the proportion of fatally injured and surviving drivers reported to have used belts for each BAC group. Note that sober drivers are belted almost 50 percent more often than are drivers in the 0.01-0.09 group; intoxicated drivers

Table 32
Percentage of Safety Belt Use for
Fatally Injured and Surviving Drivers
By BAC Group
1994

Crash Outcome	0.00	0.01-0.09	0.10+
Fatally Injured Drivers	44.8%	28.7%	17.6%
Surviving Drivers	69.7%	43.1%	32.8%

are restrained much less frequently than either group.

Likewise, Table 33 indicates that drivers who use their safety belts are much less likely to have been drinking than unrestrained drivers regardless of whether or not they were fatally injured.

Table 33
Fatal Crash Driver BAC Distribution
By Crash Outcome and Safety Belt Use
1994

Crash Outcome	Belt Use	0.00	0.01-0.09	0.10+	Total Drivers
Fatally-Injured Drivers	Yes	81.3%	5.1%	13.7%	5,285
	No	56.7%	7.1%	36.2%	9,327
Surviving Drivers	Yes	90.2%	4.1%	5.7%	9,832
	No	69.5%	9.7%	20.8%	5,533

SECTION IV - ALCOHOL TRENDS, 1982-1994

Alcohol involvement in fatal crashes decreased between 1982 and 1994 (Table 34). The decrease was not uniform; alcohol involvement dropped more for some crash types than for others. This section presents some of the major changes.

Table 34 gives the year-to-year BAC distribution of alcohol involvement in fatal crashes, while Figure 3 shows the year-to-year BAC distribution for drivers in these crashes.

Table 34
Fatal Crash BAC Distributions
1982 - 1994

Year	0.00	0.01-0.09	0.10+	Total Accidents
1982	43.3%	10.7%	46.1%	39,092
1983	45.0%	10.4%	44.7%	37,976
1984	46.7%	10.6%	42.7%	39,631
1985	48.5%	10.3%	41.2%	39,195
1986	48.3%	10.9%	40.8%	41,090
1987	49.3%	10.7%	40.0%	41,438
1988	50.1%	10.2%	39.7%	42,130
1989	51.1%	9.8%	39.1%	40,741
1990	50.6%	9.7%	39.7%	39,836
1991	52.1%	9.4%	38.5%	36,937
1992	54.5%	9.1%	36.4%	34,942
1993	56.5%	8.5%	34.9%	35,780
1994	59.1%	8.4%	32.5%	36,223

Tables 35-37 display several facts of special interest. The reduction in alcohol involvement is especially large for drivers under 21 years of age, and is seen in all time periods. For the 21-44 year age group the average reduction is much smaller, especially during nighttime driving, when alcohol involvement is notoriously high. For drivers of age 45 years or older there is a large reduction

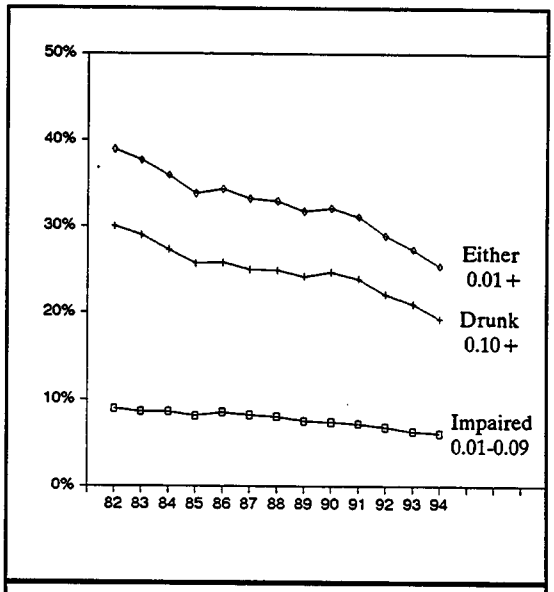


Fig. 3 - Estimated Proportion of Drivers in Fatal Crashes Who Were Impaired or Drunk

Data for Figure 3

Year	Impaired 0.01-0.09	Drunk 0.10+	Either 0.01+
1982	8.9%	30.0%	38.9%
1983	8.6%	29.0%	37.5%
1984	8.6%	27.3%	36.0%
1985	8.1%	25.7%	33.8%
1986	8.5%	25.8%	34.3%
1987	8.2%	25.0%	33.2%
1988	8.0%	24.9%	32.8%
1989	7.5%	24.2%	31.7%
1990	7.4%	24.7%	32.1%
1991	7.2%	23.9%	31.1%
1992	6.8%	22.1%	28.9%
1993	6.3%	21.0%	27.3%
1994	6.1%	19.3%	25.4%

Table 35
Reduction in High-BAC (0.10+) Drivers
By Fatal Crash Day and Time
for Age Group 16-20 Years Old
(Excluding Nonoccupant Crashes)
1982 vs.1994

Period	1982	1994	Reduction
Daytime			
-Weekday	9.3%	2.4%	74%
-Weekend	15.0%	7.3%	51%
Nighttime			
-Weekday	40.0%	20.8%	48%
-Weekend	46.6%	27.3%	41%

in drunk driving during the day as well as a smaller but substantial reduction at night.

Table 38 shows the reduction in drunk driving by vehicle type. Although alcohol involvement is generally low for drivers operating commercial vehicles (medium and heavy trucks), sizeable reductions

Table 36
Reduction in High-BAC (0.10+) Drivers
By Fatal Crash Day and Time
for Age Group 21-44 Years Old
(Excluding Nonoccupant Crashes)
1982 vs.1994

Period	1982	1994	Reduction
Daytime			
-Weekday	12.0%	8.0%	33%
-Weekend	23.6%	18.5%	22%
Nighttime			
-Weekday	47.6%	41.3%	13%
-Weekend	53.0%	50.3%	5%

Table 37
Reduction in High-BAC (0.10+) Drivers
By Fatal Crash Day and Time
for Age Group 45 Years and Older
(Excluding Nonoccupant Crashes)
1982 vs. 1994

Period	1982	1994	Reduction
Daytime			
-Weekday	8.8%	4.7%	47%
-Weekend	13.8%	7.5%	46%
Nighttime			
-Weekday	30.2%	20.4%	32%
-Weekend	33.9%	28.7%	15%

occurred for drivers of these vehicle types between 1982-1994. Motorcycle drivers not only have the highest percent of alcohol involvement, but exhibit the smallest reduction in drunk driving between 1982 and 1994.

Table 38
Reduction in High-BAC (0.10+) Drivers
in Fatal Crashes
By Vehicle Type
1982 vs. 1994

Vehicle Type	1982	1994	Reduction
Motorcycles	40.5%	28.9%	29%
Passenger Cars	30.6%	19.4%	37%
Light Trucks/Vans	34.7%	22.9%	34%
Medium Trucks	5.4%	1.9%	65%
Heavy Trucks	4.2%	1.4%	67%

Figure 4 shows that the involvement rate for motorcycle drivers remained fairly constant between 1982 and 1986, then dropped sharply in 1987 and 1988, and rose in 1989. In contrast, the involvement rate for passenger car drivers declined steadily during the same time frame. For light trucks and vans, the lowest involvement rate occurred in 1985, after which the rate increased, then leveled off before a sharp drop in 1994. Driver of medium and heavy trucks continue to exhibit low rates of alcohol involvement.

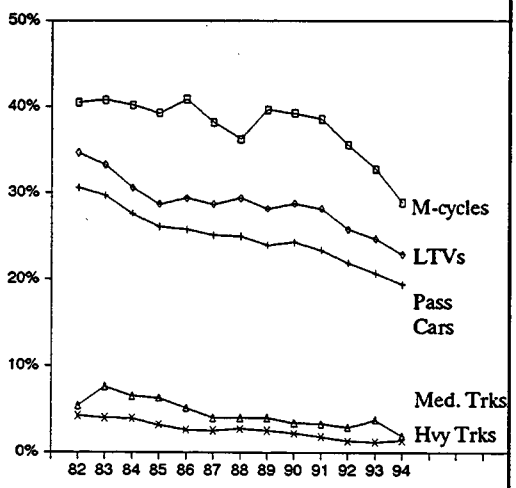


Fig. 4 - Estimated Proportion of Drivers in Fatal Crashes Who Had BAC 0.10+

Data for Figure 4

Year	M/C	Pass. Cars	LTV	Med. Trks.	Hvy. Trks.
1982	40.5%	30.6%	34.7%	5.4%	4.2%
1983	40.8%	29.7%	33.3%	7.6%	4.0%
1984	40.2%	27.6%	30.6%	6.5%	3.9%
1985	39.3%	26.1%	28.7%	6.3%	3.2%
1986	40.9%	25.8%	29.4%	5.1%	2.6%
1987	38.2%	25.1%	28.9%	4.0%	2.5%
1988	36.3%	25.0%	29.4%	4.0%	2.7%
1989	39.7%	24.0%	28.2%	4.0%	2.5%
1990	39.3%	24.3%	28.8%	3.4%	2.2%
1991	38.6%	23.4%	28.2%	3.3%	1.8%
1992	35.6%	21.9%	25.8%	2.9%	1.3%
1993	32.8%	20.7%	24.7%	3.8%	1.2%
1993	28.9%	19.4%	22.9%	1.9%	1.4%
Pct. Chg. '82-'94	-29%	-37%	-34%	-65%	-67%

Female drivers are not only less frequently drunk than are males but also show a greater reduction in alcohol involvement from 1982-1994 (Table 39).

Table 39
Reduction in High-BAC (0.10+) Drivers in Fatal Crashes
By Driver Sex
1982 vs. 1994

Driver Sex	1982	1994	Reduction
Male	32.4%	21.9%	32%
Female	18.9%	11.1%	41%
All Drivers	30.0%	19.3%	36%

A different aspect of alcohol trends is shown in Table 40, which presents the 1982-1994 reduction at the crash level.

Table 40
Reduction in High-BAC (0.10+) Drivers
By Fatal Crash Type and Land Use
1982 vs. 1994

Land Use	Crash Type	1982	1994	Reduction
Urban	Single.	56.3%	42.2%	25%
	Multi.	38.5%	23.4%	39%
	Nonocc.	42.3%	35.4%	16%
Rural	Single.	55.2%	42.1%	24%
	Multi.	34.4%	20.3%	41%
	Nonocc.	51.0%	38.4%	25%

Overall, the proportion of high BAC fatal crashes dropped 27 percent in urban areas and 30 percent in rural areas.

INDEX OF TABLES

Section IV - Alcohol Trends, 1982-1994